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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,045	09/22/2003	Lee M. Hively	920976.00006	7844
26710	7590	04/13/2006		
QUARLES & BRADY LLP 411 E. WISCONSIN AVENUE SUITE 2040 MILWAUKEE, WI 53202-4497			EXAMINER BATHINI JR, LEON M	
			ART UNIT 2857	PAPER NUMBER

DATE MAILED: 04/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/667,045

Applicant(s)

HIVELY, LEE M.

Examiner

Leon M. Bathini Jr.

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 9/22/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10, 11, 13, 14, 16 and 17 is/are rejected.
- 7) ☒ Claim(s) 8, 9, 12 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/22/2003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Minor Informalities*

1. **Claims 4, 5, and 6** are objected to because of the following informality. The "process-indicative data" lacks antecedent basis. The "process-indicative data" is not recited in claim 1.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-3, 6, 10, 13, 14, and 18** are rejected under 35 U.S.C. 102(b) as being anticipated by Hively et al. (U.S. Patent No. 6,484,132 B1).

With respect to **claims 1-3, 6, 10, 13, 14, and 18**, Hively et al. teach the following:

- acquiring a plurality of sets of data for at least one channel of data for at least one test subject or process (col. 12, lines 21-29);
- computing a renormalized measure of dissimilarity from distribution functions derived from a phase space for each respective channel of data (col. 10, lines 3-16 and col. 14, lines 34-42);

- comparing said renormalized measure of dissimilarity to a threshold ( $U_c$ ) for number occurrences ( $N_{occ}$ ) to indicate a condition change in said renormalized measure of dissimilarity (col. 10, lines 14-19; col. 14, lines 42-44; and col. 15, lines 55-58);

- detecting a simultaneous condition change in a plurality ( $N_{sim}$ ) of renormalized measures of dissimilarity to determine a forewarning of the critical event (col. 14, lines 50-61);

- wherein said one channel of data corresponds to a parameter that is calculated from a plurality parameters corresponding to a plurality of channels of data (col. 12, lines 21-39).

- a method of computing a multi-channel time-delay phase-space (PS) construction, which has the form:  $y(i)=[s(1)l, s(1)i+\lambda, s(1)i+2\lambda, \dots, s(2), s(2)i+\lambda, s(2)i+2\lambda, \dots, s(c)l, s(c)i+\lambda, s(c)i+2\lambda, \dots]$  where  $s(c)$  denotes the symbolized data for  $c$ -th channel (col. 6, lines 3-24);

- wherein the test subject is a human patient (col. 12, lines 21-29)
- wherein the test subject is a mechanical device or physical process (col. 17, lines 41-43)

- wherein the process-indicative data is a difference between two channels of EEG data (col. 8, lines 37-50)

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 4, 5, 16, and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hively et al. in view of Hively et al. (U.S. Patent No. 5,815,413).

Hively et al. (U.S. Patent No. 6,484,132 B1) teach all the features of claims 1 and 10 from which claims 4 and 16 depend. Hively et al. teach where data may be used from tools, such as a drill bit, or a process such as a nuclear system (col. 17, lines 38-45). However, Hively et al. do not teach wherein the process-indicative data is three-phase electrical power.

Hively et al. (U.S. Patent No. 5,815,413) teach a method wherein the process-indicative data is three-phase electrical power (col. 9, lines 40-42) and is vibration mechanical power (col. 10, lines 13-23).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Hively et al. (U.S. Patent No. 6,484,132 B1) to include the three-phase electrical power data from the chaotic time series analysis of Hively et al. (U.S. Patent No. 5,815,413), because a tool, such as a power drill, are operated by using the three-phase AC power from the power lines. It would also have been obvious

to include vibration mechanical power data because vibration mechanical power data is generated from a mechanical device such as a power drill.

**Claims 7 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hively et al. in view of Clapp et al. (U.S. Patent No. 5,626,145).

Hively et al. teach filtering each set of data with a zero-phase quadratic filter that filters out low-frequency artifacts (col. 13, lines 5-14). However, Hively et al. do not teach the use of a filter to filter out high-frequency artifacts.

Clapp et al. teach filtering data with a zero-phase quadratic filter to filter out high frequency artifacts (col. 4, lines 52-64).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Hively et al. to include the zero-phase quadratic filter that filters high frequency artifacts as taught by the low-frequency extraction method of Clapp et al., because a zero-phase quadratic filter that filters high frequencies preserves the phase relationships of nonlinear data and filters out noise usually acquired during data acquisition.

#### ***Allowable Subject Matter***

6. **Claims 8, 9, 12, and 15** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


### **Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon M. Bathini Jr. whose telephone number is 571-272-7129. The Examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Marc Hoff can be reached on 571-272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LBJ

  
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